



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,991	10/30/2003	Manish Sharma	100111489-7	7875

7590 12/10/2004

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

WILSON, CHRISTIAN D

ART UNIT	PAPER NUMBER
----------	--------------

2824

DATE MAILED: 12/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/696,991

Applicant(s)

SHARMA ET AL.

Examiner

Christian Wilson

Art Unit

2824

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 15 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: search history.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 15, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen *et al.* in view of Nakao.

Regarding claim 15, Chen *et al.* (US 6,292,389) teaches an MRAM device comprising a sense line 28, a pinned layer 26, a barrier layer 16 between the sense and pinned layers, a pinning layer 24 aligned with the pinned layer, and a magnetic sink 20 in electromagnetic communication of the device which modifies the magnetic field effects at the boundaries of a word line, pinned layer, and pinning line [column 5, lines 30-45]. Chen *et al.* teaches a memory device but does not discuss a plurality of lines or a pinning layer perpendicular to the sense lines. Nakao (US 6,509,621) teaches an MRAM device with a plurality of lines [Figure 3A] where the pinning layer is perpendicular to the sense lines [Figure 3B]. It would have been obvious to one of ordinary skill in the art to use the MRAM configuration of Nakao in the device of Chen *et al.* since Nakao teaches that this configuration provides a simple construction which is suitable for high-density devices [column 1, lines 23-30].

Regarding claim 18, Chen *et al.* further teaches a magnetic sink layer that extends along the direction of the pinning line [Figure 1].

Regarding claim 19, Chen *et al.* further teaches a conductive non-magnetic layer 13 adjacent to the magnetic sink layer.

3. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen *et al.* and Nakao as applied to claim 15 above, and further in view of Lin *et al.*

Chen *et al.* as modified by Nakao teaches a nonmagnetic magnetic sink layer, but does not discuss a soft magnetic material for the magnetic sink layer. Lin *et al.* (6,127,053) teaches a nonmagnetic or soft magnetic material for the magnetic sink layer [column 6, lines 15-20]. It would have been obvious to one of ordinary skill in the art to use the soft magnetic material of Lin *et al.* in the device of Chen *et al.* since Lin *et al.* teaches that a soft magnetic material is an equivalent material choice for providing a sink layer which provides a means to modify the crystallographic texture of the overlying layer.

Allowable Subject Matter

4. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: applicant discloses a novel magnetic sink layer which comprises a seed layer and a pinned layer which extends beyond the other layers and the first portion of the sink layer.

Conclusion

6. A copy of the EAST search history is enclosed.

Art Unit: 2824

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian Wilson whose telephone number is (571) 272-1886.

The examiner can normally be reached on weekdays, 7:30 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Christian Wilson, Ph.D.
Primary Examiner
Art Unit 2824

CDW